and illustration of the meaning of correlation, together with the measurement of the degree of relationship.

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Statistical Averages. A Methodological Study. Authorized translation from the German of FRANZ ZIZEK by WARREN M. PERSONS. (New York: Henry Holt and Company. 1913. Pp. ix, 392. $2.50.)

Dr. Zizek's *Die statistischen Mittelwerte*, published in 1908, is a study of abstract statistical method as applied to "the great central problem of averages." It is not a book which embodies experience of practical statistics. It does not, save for illustrative purposes, deal with the concrete subject-matter of any branch of statistical investigation. In substance it is a critical compilation from the many-sided literature of theoretical statistics, in which the author assiduously versed himself. It links the fundamental concepts of "mathematical statistics" with more familiar principles, though it avoids mathematical language. Dr. Zizek pretends to no authority as a mathematician; but he properly "deems some consideration of mathematical statistics indispensable because its problems do not differ essentially from those of elementary scientific statistics."

The treatment of the subject falls into three parts. Part I, on Statistical Averages in General, offers a preliminary classification of statistical series; discusses the criteria of data from which valid averages may be derived; and outlines the nature and purposes of averages. Part II is devoted to The Various Kinds of Averages—the arithmetic mean, the geometric mean, the median and the mode—but includes, under the rubric "The Arithmetic Mean and Mathematical Statistics," a section on statistical applications of the laws of error and of probability. Part III treats of Dispersion about the Mean or Average, and thus eventually leads the reader again into the domain of the mathematical statistician. A group of appendices deals with special topics and includes a useful bibliography.

Professor Persons offers his translation as a college text. The German original had seemed to him "to meet the requirements of a non-mathematical textbook on statistics better than any work available in English. . . ." The reader, therefore, is led to judge the book according to its fitness for such use, realizing how warm a

welcome awaits any really satisfactory statistical manual in our own language. And he will find in the present volume many merits. First of all, Dr. Zizek's concentration of attention upon averages undeniably gives a helpful unity to the main principles which he presents, and increases the significance of the more subordinate principles by its implication of their interrelations. His discussion of isolated averages as contrasted with averages based on a series of definite items is suggestively worked out. He lays commendable stress on the interpretation of dispersion and on the typical or the non-typical quality of means. In consequence his book goes considerably beyond the ordinary textbook in showing how the scientific use of averages reveals apparent laws behind the empirical evidence of collective phenomena. The hackneyed theme of statistical regularity versus free will is intelligently developed. The chapter on the median is a useful reference. There is an interesting passage on the importance of homogeneity of material in comparisons of averages.

Throughout the book apt though scattering examples fill the interstices of the theoretical outline; and the citations of sources and authorities introduce the reader to a wide literature. And yet, as the translator agrees, the complete lack of tangible illustrative material in the form of tables, charts, etc., is a serious defect. Even the verbal illustrations which are so profusely used are commonly too slight to challenge the reader's original thought. This is the more unfortunate since the book is forbiddingly abstract and monotonous. Its formal scheme, moreover, is by no means always convincing. The threefold classification of series, enunciated at the outset (and dulled in translation), seems overdriven and pedantic at many points. Indeed, speaking generally, the exposition is not successful. Essentially a digest of other writings, the work lacks individuality. Its style, at least in the English rendering, is wanting in the vigor and marching movement which may and should vivify even statistical treatises. Some of its generalizations are almost meaningless apart from the concrete examples hurried to their relief. The discussion here and there strays to fields where the reader without previous knowledge could hardly follow. Yet many important phases of statistics are untouched. Thus the book almost wholly ignores the technique of collecting statistical data and presenting statistical results. These and other branches of study would have to be separately provided for in rounding out a college course.

Finally, a good many inaccuracies and infelicities of detail might be pointed out. But the book is not to be judged by its slips. On the whole it is a useful recruit for the reference-shelf. One finds difficulty in believing that it will commend itself as a general text for beginners.

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Financing the Wage-Earner's Family. A Survey of the Facts Bearing on Income and Expenditures in the Families of American Wage-Earners. By SCOTT NEARING. (New York: B. W. Huebsch. 1913. Pp. 171. $1.25.)

Two problems of surpassing interest are proposed by Dr. Nearing when it is asked, "What amount of money wage is required to purchase the housing, food, clothing, fuel and other items of normal family consumption?" and "What relation at present exists between income and expenditure?"

After it has been shown that, although unemployment from various causes may reduce income to zero, the maximum earnings of the American workingman are rigidly fixed by the limitations of his occupation, there is presented the task of defining a standard of living in terms, first of goods and then of money. To this end, the author accepts the estimates for the "minimum" and "fair" standards in the *Report on the Condition of Woman and Child Wage-Earners in the United States.*[1] Very properly deprecating the minimum money standard on the ground that only a woman of superhuman ability could finance a family on so small a sum, Dr. Nearing concludes that "the available data indicate that a man, wife, and three children under fourteen cannot maintain a fair standard of living in the industrial towns of eastern United States on an amount less than $700[2] a year in the southern, and $750 a year in the northern, states. In the large cities, where rents are higher, this amount must be increased by at least $100" (p. 97).

The writer, in attacking his second problem, makes use of the results of his study of *Wages in the United States,* namely that "in the district lying east of the Rocky Mountains and north of the Maryland (!) and Dixon Line, half of the adult males in the United States are earning less than $500 a year; that three fourths

[1] Vol. 16, p. 133 *et seq.* and p. 233 *et seq.*

[2] $600 (?) See p. 91.